

What is claimed is:

1           1. A capacitive digital caliper used for measuring inside or outside  
2 dimensions of the measured object comprising

3           a main beam with jaws on its end portion; and

4           a slider sliding along the length of said main beam, having jaws on  
5 its end portion matching with those of said main beam, provided with a  
6 measuring display device comprising a measuring display and a  
7 measuring circuit board, wherein,

8           a rack is provided along the length of said main beam, and is  
9 suitable for the range of said main beam;

10          said slider is provided with

11          a gear system comprising at least a pinion and its shaft, engaged  
12 with said rack; and

13          a sealed cavity making use of a wall fastened to the outside of said  
14 measuring circuit board, is provided with

15          a stator plate of the first electrode forming a certain pattern fastened  
16 on said measuring circuit board and electrically coupled with said  
17 measuring circuit; and

18          a rotor plate of the second electrode forming a certain pattern  
19 concentrically opposed at a distance to said first electrode set, and  
20 fastened onto said shaft of said gear system, which penetrates through a  
21 motive sealing member on said cavity wall, and connected to said gear

22 system outside said cavity.

1           2. A capacitive digital caliper according to claim 1, wherein the  
2 indexing of said rack is installed in parallel with the sliding direction of  
3 measurement.

1           3. A capacitive digital caliper according to claim 1, wherein said  
2 first and second electrode sets mutually opposed is circular-grid-shaped.

1           4. A capacitive digital caliper according to claim 1, wherein said  
2 rotor plate is disc-shaped.

1           5. A capacitive digital caliper according to claim 1, wherein the  
2 slipped position of said slider on said main beam is a function of  
3 rotational angular position of said rotor plate and the circles turned over.

1           6. A capacitive digital caliper according to any one of claims 1 to 5,  
2 wherein said rack and said pinion as well as said sealed cavity connected  
3 with said rack and pinion can be installed on the front face of said caliper.

1           7. A capacitive digital caliper according to any one of claims 1 to 5,  
2 wherein said rack and said pinion as well as said sealed cavity connected  
3 with said rack and pinion can be installed on the back face of said caliper.

1           8. A capacitive digital caliper used for measuring the inside and  
2 outside dimensions of the measured object comprising

3           a main beam with jaws on its end portion; and

4           a slider sliding along the length of said main beam, having jaws on  
5 its end portion matching with those of said main beam, provided with a

6 measuring display device comprising a measuring display and a  
7 measuring circuit board, wherein,

8 a rack is provided along the length of said main beam, and is  
9 suitable for the range of said beam;

10 said slider is provided with

11 a gear system comprising at least a pinion and its shaft, engaged  
12 with said rack; and

13 a sealed cavity, which is provided with

14 a measuring display device fastened on top of said cavity;

15 a stator plate of the first electrode forming a certain pattern,  
16 fastened on the said measuring circuit board, and electrically coupled  
17 with said measuring circuit;

18 a rotor plate of the second electrode forming a certain pattern  
19 concentrically opposed at a distance to said first electrode set, and  
20 fastened onto said shaft of said gear system, which penetrates through a  
21 motive sealing member on said cavity, and connected to said gear system  
22 outside said cavity.

1 9. A capacitive digital caliper according to claim 8, wherein the  
2 indexing of said rack is installed in parallel with the sliding direction of  
3 measurement.

1 10. A capacitive digital caliper according to claim 8, wherein said  
2 first and second electrode sets mutually opposed is circular-grid-shaped.

1        11. A capacitive digital caliper according to claim 8, wherein said  
2 rotor plate is disc-shaped.

1        12. A capacitive digital caliper according to claim 8, wherein the  
2 slipped position of said slider on said main beam is a function of  
3 rotational angular position of said rotor plate and the circles turned over.

1        13. A capacitive digital caliper according to any one of claims 8 to  
2 12, wherein said rack and said pinion as well as said sealed cavity  
3 connected with said rack and pinion can be installed on the front face of  
4 said caliper.

1        14. A capacitive digital caliper according to any one of claims 8 to  
2 12, wherein said rack and said pinion as well as said sealed cavity  
3 connected with said rack and pinion can be installed on the back face of  
4 said caliper.

1        15. A capacitive digital caliper used for measuring inside, and  
2 outside dimensions of the measured object comprising

3        a main beam having jaws on its end portion; and

4        a slider sliding along the length of said main beam, having jaws on  
5 its end portion matching with those of said main beam, provided with a  
6 measuring display device comprising a measuring display and a  
7 measuring circuit board which are defined in a distance, wherein:

8        a rack is provided along the length of said main beam, and is  
9 suitable for the range of said main beam;

10        said slider is provided with  
11        a gear system comprising at least a pinion and its shaft, engaged  
12 with said rack; and  
13        a sealed cavity provided with  
14        a measuring display device fastened on top of said cavity;  
15        a stator plate of the first electrode forming a certain pattern fastened  
16 on said measuring circuit board and electrically coupled with said  
17 measuring circuit;  
18        a rotor plate of the second electrode forming a certain pattern  
19 concentrically opposed at a distance to said first electrode set, and said  
20 second electrode set being installed between said spaced measuring  
21 display and measuring circuit board, and fastened onto said gear system,  
22 which penetrates through said stator plate fastened on said measuring  
23 board and a motive sealing on said cavity, connected to said gear system  
24 outside said cavity.

1        16. A capacitive digital caliper according to claim 15, wherein the  
2 indexing of said rack is installed in parallel with the sliding direction of  
3 measurement.

1        17. A capacitive digital caliper according to claim 15, wherein said  
2 first and second electrode sets mutually opposed is circular-grid-shaped.

1        18. A capacitive digital caliper according to claim 15, wherein said  
2 rotor plate is disc-shaped.

1        19. A capacitive digital caliper according to claim 15, wherein the  
2        slipped position of said slider on said main beam is a function of  
3        rotational angular position of said rotor plate and the circles turned over.

1        20. A capacitive digital caliper according to any one of claims 15 to  
2        19, wherein said rack and said pinion as well as said sealed cavity  
3        connected with said rack and pinion can be installed on the front face of  
4        said caliper.

1        21. A capacitive digital caliper according to any one of claims 15 to  
2        19, wherein said rack and said pinion as well as said sealed cavity  
3        connected with said rack and pinion can be installed on the back face of  
4        said caliper